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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,900	04/09/2001	Giovanni Zangari	205213US23	5549

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EXAMINER

BERNATZ, KEVIN M

ART UNIT PAPER NUMBER

1773

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,900

Applicant(s)

ZANGARI ET AL.

Examiner

Kevin M. Bernatz

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-39 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 27-39 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Amendment

1. Amendments to claims 27, 33 and 39, filed on April 6, 2006, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Request for Continued Examination

3. The Request for Continued Examination (RCE) under 37 CFR 1.53 (d) filed on April 6, 2006 is acceptable and a RCE has been established. An action on the RCE follows.

Claim Rejections - 35 USC § 102

4. Claims 27 – 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Daimon et al. (U.S. Patent No. 5,480,694) for the reasons of record as set forth in Paragraph No. 4 of the Office Action mailed on August 5, 2005.

Regarding the amended limitation “wherein the array has a distribution of nanoparticles made of said one or more metals or non-metals deposited in said nanopores”, Daimon et al. disclose the claimed limitation (*Figure 3, elements labeled “Magnetic particles”*).

Regarding the amended limitation “wherein the nanoparticles have an average length, L , and a standard deviation, σ , such that σ/L is no more than 5%”, it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prima facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, since the disclosed product is used for high density recording applications where it is known that high uniformity is desired, the Examiner deems that there is a sound basis that the process disclosed by Daimon et al. would inherently result in a product meeting the claimed limitations, especially since Daimon et al. disclose pores having a fairly large depth (150 nm in example 1) and the present claim is effectively open to an infinite value of σ , given that there is no maximum depth claimed (i.e. σ/L for $L \sim \text{infinity}$ would be 0%, which is “no more than 5%”).

Furthermore, the Examiner notes that it is known in the art that the surface of the magnetic layer (in fact, the entire medium) must be smooth in order to function as a recording disk, so planarization of the upper surface of the magnetic layer is deemed to be inherently performed in the process of Daimon et al., which essentially means that the entire σ must come purely from variation in the bottoms of the pores. If we look at Table 7, Specimen B, we see a magnetic layer thickness of 2500 Å meeting the claimed coercivity and squareness limitations. Provided that σ is less or equal to 125 Å (12.5 nm), the embodiment represented by Specimen B would anticipate the claimed invention. Given that a *standard deviation* in variation in depth of over 125 Å is deemed to be an extremely large value, the Examiner notes that there is sound basis that, at the very least, the above embodiment anticipates the claimed limitations.

5. Claims 27 – 31, 33 – 37 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Kikitsu et al. (U.S. Patent No. 6,602,620 B1) for the reasons of record as set forth in Paragraph No. 5 of the Office Action mailed August 5, 2005.

Regarding the amended limitation “wherein the array has a distribution of nanoparticles made of said one or more metals or non-metals deposited in said nanopores”, Kikitsu et al. disclose the claimed limitation (*Figure 13A*).

Regarding the amended limitation “wherein the nanoparticles have an average length, L , and a standard deviation, σ , such that σ/L is no more than 5%”, Kikitsu et al. teach both forming the pores so that the bottoms are well defined at either the underlayer or at a filler material (*Figures 6 – 8, 11 and 15, and col. 31, lines 33 – 67*),

and of planarizing the upper surface of the recording layer after filling the pores (*col. 33, lines 53 – 55*). As such, the Examiner deems while Kikitsu et al. may not explicitly teach controlling " σ/L " to be less than 5%, there is sufficient specificity within the Kikitsu et al. disclosure for one of ordinary skill in the art to readily appreciate that Kikitsu et al. is implicitly teaching that " σ/L " should be minimized, and preferably equal to 0 (i.e. all the pores should be of exactly the same depths).

Claim Rejections - 35 USC § 103

6. Claims 32 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. as applied above, and further in view of Black et al. (U.S. Patent No. 6,162,532) for the reasons of record as set forth in Paragraph 6 of the Office Action mailed on August 5, 2005.

7. Claims 27 – 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daimon et al. as applied above, and further in view of Kikitsu et al. ('620) and Ohkura et al. (U.S. Patent App. No. 2004/0001964 A1).

While the Examiner maintains that there is sound basis that the product of Daimon et al. inherently possesses the claimed limitations, the Examiner acknowledges that Daimon et al. does not explicitly disclose the claimed σ/L limitation.

However, the Examiner notes that Kikitsu et al. explicitly teach planarizing the top surface of the patterned magnetic layer (*col.33, lines 53 – 55*) as well as forming the bottoms of the pores at well defined locations (*Figures 6 – 8, 11 and 15, and col. 31,*

lines 33 – 67). Furthermore, the Examiner notes that Ohkura et al. teach that it is important to form pores of uniform depth to form a recording layer having uniform properties, and teach using a layer of a valve metal as a etching stop layer under the porous layer, thereby forming the bottoms of all the pores at the upper surface of the valve metal layer (*Paragraphs 0044, 0045 and 0150 – 0159*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Daimon et al. to insure that the pores meet the claimed σ/L limitations as taught by Kikitsu et al. and Ohkura et al. since that would result in a recording layer having uniform properties throughout.

8. Claims 27 – 31, 33 – 37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. ('620) as applied above, and further in view of Ohkura et al. ('964 A1).

While the Examiner maintains that there is sufficient specificity in the disclosure of Kikitsu et al. to anticipate the claimed limitations, the Examiner acknowledges that Kikitsu et al. does not explicitly disclose the claimed σ/L limitation.

However, the Examiner notes that Kikitsu et al. explicitly teach planarizing the top surface of the patterned magnetic layer (*col.33, lines 53 – 55*) as well as forming the bottoms of the pores at well defined locations (*Figures 6 – 8, 11 and 15, and col. 31, lines 33 – 67*). Furthermore, the Examiner notes that Ohkura et al. teach that it is important to form pores of uniform depth to form a recording layer having uniform properties, and teach using a layer of a valve metal as a etching stop layer under the

porous layer, thereby forming the bottoms of all the pores at the upper surface of the valve metal layer (*Paragraphs 0044, 0045 and 0150 – 0159*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. to insure that the pores meet the claimed o/L limitations as taught by Kikitsu et al. and Ohkura et al. since that would result in a recording layer having uniform properties throughout.

9. Claims 32 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. in view of Ohkura et al. as applied above, and further in view of Black et al. ('532).

Kikitsu et al. and Ohkura et al. are relied upon as described above.

The limitations of claims 32 and 38 are met for the same reasoning as applied with regard to the rejection predicated on Kikitsu et al. in view of Black et al. (see Paragraph 6 above).

Response to Arguments

10. The rejection of claims 27 - 39 under 35 U.S.C § 102(b) and/or 103(a) – Daimon et al., alone or in view of various references

11. The rejection of claims 27 - 39 under 35 U.S.C § 102(b) and/or 103(a) – Kikitsu et al., alone or in view of various references

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. In so far as they apply to the present rejection of record,

Applicant(s) argue(s) that the use of “conventional AC ECD (as done in each of Daimon et al. and Kikitsu et al., along with sputtering), has been shown by the present inventors to result in unacceptable values of σ/L on the order of 16%” (*page 6 of response*) and that the claimed σ/L values “cannot be readily achieved using the methods of the cited references (at least not without undue experimentation” (*ibid*). The Examiner respectfully disagrees.

The Examiner notes that a single embodiment not directed to the closest prior art (i.e. either of the Daimon et al. or Kikitsu et al. inventions) is not sufficient to support applicants allegations that the inventions of Daimon et al. or Kikitsu et al. would inherently meet the claimed σ/L limitations.

With regard to applicants’ arguments directed to the Black et al. invention (*page 6 – 7 of response*), the Examiner notes that applicants appear to be reading the specification into the claims. The Examiner notes that the specification is not the measure of the invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding prior art. *In re Sporck*, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1968). Specifically, “substrate” is generic and is merely a layer used to support another layer. Again, there is no evidence for applicants’ allegations that “Black cannot achieve the uniformity required by the present invention claims, and cannot achieve a product that would be capable of perpendicular recording”.

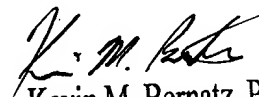
Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
June 22, 2006


Kevin M. Bernatz, PhD
Primary Examiner